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PROJECTIONS OF HOUSING AND RESIDENTIAL LAND REQUIREMENTS IN THE COLUC AREA

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A Report Prepared for
The COLUC Task Force

By

Clayton Research Associates

March, 1974 ✓

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CHAPTER 1

INTRODUCTION

This report presents the results of the first phase of a two phase study dealing with housing and residential land requirements in the COLUC Area. Included in the report are our "best estimates" of housing requirements by type and concomitant residential land requirements for the 1971-2001 period for the entire COLUC Area, assuming that the impact of government activities and programs on housing and land markets will continue much as they have over the last decade or two. Also included are the preliminary results of a first effort at projecting residential land requirements for 23 urban places within the COLUC Area both for the 1971-2001 period and the period between 1971 and the time each urban place attains a mature state (*i.e.*, when an urban place is performing the functions and role defined for it in the COLUC *Mature State Plan*).

These latter projections should be regarded as first approximations only, and the intention is to refine them further in the second phase of the study. Even with some additional analysis it has to be recognized that these urban place projections will be only as dependable as the innumerable assumptions upon which they are based. In this connection the COLUC Task Force may wish to consider the desirability of constructing a model that

would enable the relatively easy manipulation of the many data involved as well as the effects of changing population, household and housing mix assumptions for the urban places.

Our report is a summary of the main findings and projections derived in several detailed analyses which are appended as technical appendices to the report. While the Phase 1 Report was initially to include only our findings as to probable housing mix and residential land requirements for the COLUC Area and 23 urban places within the COLUC Area, at the request of members of the COLUC Support Staff, technical support material has also been included.

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CHAPTER 2

HOUSEHOLD PROJECTIONS FOR THE COLUC AREA

Projections of family and non-family households in the COLUC Area in 1986 and 2001 were based upon a technique which included the following steps:

(1) Projection of total population and its age composition;

(2) Projection of family and non-family household to population ratios by age grouping of population; and

(3) Projection of total family and non-family households by age of household head.

Projections of total population and the age composition of the COLUC Area population for the years 1986 and 2001 were provided by the COLUC Support Staff. Household/population ratios by age group of population for 1986 were based upon preliminary projections in a CMHC study dealing with net household formation in census metropolitan areas in Canada. Ratios for the years 2001 were derived by the consultant from data included in the CMHC study. Projections of households were made by multiplying the population projections by age group for 1986 and 2001 by the relevant household/population ratios.

Total households in the COLUC Area are expected to increase rapidly from approximately 985,000 households in 1971 to about 1,700,000 and 2,400,000 households in 1986 and 2001 respectively.

The growing relative importance of non-family households which has characterized the postwar period throughout the country is expected to continue in the COLUC Area over the 1971-2001 period. Non-family households as a proportion of total households are projected to increase from an estimated 20 percent in 1971 to about 29 percent in the year 2001. Average household size is expected to decline from 3.4 persons in 1971 to 2.6 persons in 1986 and 2.4 persons in 2001.

CHAPTER 3

PAST TRENDS IN HOUSING STARTS BY TYPE IN THE COLUC AREA

As a basis for converting our household projections into housing requirements by type, an analysis was undertaken in order to identify and to try to explain trends in housing starts by type in the COLUC Area over the past 10-15 years. As part of the analysis trends in the COLUC Area were compared with selected other areas.

Several interesting features were found in the past pattern of housing starts in the COLUC Area. Firstly, apartments have been a prominent component of total housing starts as far back as the early 1950's, accounting for about one-third of total starts at that time. Secondly, during the late 1950's and the decade of the 1960's apartment starts as a proportion of total housing starts moved sharply upward. This was part of a nation-wide trend. Thirdly, apartment starts as a proportion of total starts declined sharply during the early years of the 1970's. Again, this relative decline in apartment starts appears to be a nation-wide phenomenon. Lastly, semi-detached, duplex and row dwelling units in the early 1970's accounted for a significantly greater share of total housing starts in the COLUC Area than in the earlier periods.

In spite of generally higher levels of family income in the COLUC Area, it appears that over the past decade or two many families who would prefer to live in family-type accommodation, and who could do so in many other parts of the country, have had to occupy apartments. In recent years almost all new apartment construction in the COLUC Area has been of the high rise variety, which is not considered to be a suitable form of housing for families by many observers of the social scene.

The trend toward increased apartment construction in the COLUC Area during the 1960's probably reflected the increased role of non-family households in the housing market and a combination of preferences and rising home-ownership costs (relative to incomes) for family households. Increases in the proportion of families residing in apartments during the 1960's were probably about one-third due to preferences and two-thirds to a housing cost/income squeeze.

In the early 1970's it appears that a major switch has taken place in the type of accommodation preferred by families; fewer families now want to live in apartments.

CHAPTER 4

TRENDS IN VACANCY RATES AND NET REPLACEMENT DEMAND IN THE COLUC AREA

Total housing requirements are defined to include increases in vacancies and net replacement demand as well as net household formation. Vacant dwellings may be dwellings which have been previously occupied or newly completed units. Net replacement demand represents the net effect on the supply of housing of losses from the stock of housing due to demolitions, fires, abandonments, conversions of residential structures to non-residential uses and net additions to the housing stock from conversions of non-residential structures to residential uses, conversions of single-detached houses into two-unit structures, etc.

It is concluded that the "normal" vacancy rate in the COLUC Area is in the 1.5-2.0 percent range for single-detached houses and 4-5 percent for apartments.

Past trends in the magnitude of net replacement demand in the COLUC Area can not be reliably determined. What little evidence there is suggests that net replacement demand is only a small component of total housing requirements in the Area.

CHAPTER 5

PROJECTIONS OF HOUSING AND RESIDENTIAL LAND REQUIREMENTS FOR THE COLUC AREA

Separate projections of demographic housing requirements and requirements due to increases in vacancies are made for the 1971-1986 and 1986-2001 periods. Because it was not possible to obtain reliable data on past trends in net replacement demand and, since it appears that this component of housing requirements is relatively small and is assumed to remain so over the 1971-2001 period, projections of net replacement demand are not made.

Projections of housing requirements are made for low density housing (single-detached, semi-detached and duplex units), medium density housing (row units, stacked townhouses, etc.) and high density housing (high-rise apartments).

Over the 1971-2001 period the projections indicate that about 1.5 million new housing units will be required in the COLUC Area. Total housing requirements are about the same over each of the 1971-1986 and 1986-2001 periods. Almost 70 percent of housing requirements are projected to be high density housing with medium density and low density housing each accounting for about 15 percent of total housing requirements.

The projections of residential land requirements, which

are gross rather than net acreages, indicate that a total of about 56,000 acres of land will be needed over the entire 1971-2001 period, with almost 60 percent of this land needed during the 1971-1986 period. Most of the land is needed to provide for low density housing. It should be noted that while most of the required land will be previously undeveloped land, a proportion of the high density housing will be constructed on redeveloped sites.

CHAPTER 6

PROJECTION OF RESIDENTIAL LAND REQUIREMENTS BY URBAN PLACE

The land requirement projections are based on the population allocations provided by the COLUC Support Staff, the consultant's knowledge of trends within the COLUC Area housing markets, the considerable amount of census and housing data collected on a number of urban places within the COLUC Area and innumerable assumptions.

Over the 1971-1986 period residential land requirements are projected to be largest in the West Sector of the COLUC Area (10,000 acres) followed by the East Sector (8,900 acres) and Metro Toronto (8,700) acres. It should be noted that these projections include all sites needed for residential construction, i.e., both previously undeveloped sites and redeveloped sites.

In the 1986-2001 period, projected land requirements are again largest in the West Sector (10,700 acres) and are next largest in the East Sector (6,300 acres). Land requirements in Metro Toronto are sharply below the 1971-1986 level during this period.

These land requirement projections must be regarded as rough approximations only and are presented in order to stimulate discussion on the very complex estimating problems involved into their preparation. It is expected that the projections will be further refined for presentation in the study's final report.

TECHNICAL APPENDIX A

HOUSEHOLD PROJECTIONS FOR THE COLUC AREA[*]

The general approach followed to project the number of households in the COLUC area in the years 1986 and 2001 includes the following steps:

(1) Projection of total population and its age composition;

(2) Projection of family and non-family household to population ratios by age grouping of population; and

(3) Projection of total family and non-family households by age of household head.

1. TOTAL POPULATION BY AGE GROUP, 1976 AND 2001

Projections of total population and the age composition of the population for the years 1986 and 2001 were provided by the COLUC Support Staff. The Support Staff in addition provided information on population growth in the COLUC Area over the 1941-1971 period (Table A-1).

According to these projections, total population of the COLUC Area is expected to increase from 3,325,000 persons in 1971

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[*] Projections of total households for the COLUC Area at maturity could not be made since the consultant was not provided with projections of total population and its age composition at maturity.

Table A-1: POPULATION GROWTH, COLUC AREA, SELECTED YEARS, 1941-2001

	Total Population 000's of Persons	Increase in Population 000's of Persons	Percent
1941	1,290		
		762	59.3
1956	2,052		
		1,273	62.0
1971	3,325		
		1,061	31.9
1986	4,386		
		1,292	29.4
2001	5,678		

Source: COLUC Support Staff.

Table A-2: COMPARISON OF ALTERNATIVE POPULATION PROJECTIONS, COLUC AND TORONTO-HAMILTON AREAS, SELECTED YEARS, 1971-2001(1)

		000's of Persons	
	COLUC Area	T.A.R.M.S. Area(2)	Toronto and Hamilton Census Metropolitan Areas(2)
1971	3,325	3,272	3,126
1981		4,068	3,958
1986	4,386		4,423
1991		4,905	
2001	5,678	5,653	

(1) Blank spaces indicate that data are not available for these years.

(2) Preliminary.

Sources: Table A-1; Metropolitan Toronto Planning Board Research Division; and Economics and Statistics Division, Central Mortgage and Housing Corporation.

to about 4,400,000 persons in 1986 and to about 5,700,000 persons in 2001.

In terms of growth rates, population growth in the COLUC Area is anticipated to slacken considerably over the next 30 years. Compared with an average growth rate of about 60 percent per 15 years during the 1941-1971 period, population growth is expected to be only about 30 percent per 15 years over the 1971-2001 period. In terms of persons, population growth is expected to decline to about 1,100,000 persons over the 1971-1986 period compared to about 1,300,000 persons over the 1956-1971 period; over the 1986-2001 period the increase in population is expected to rise to about 1,300,000 persons.

It is useful to compare the COLUC Support Staff population projections with two other recent population projections (Table A-2).* The Research Division of the Metropolitan Toronto Planning Board in preliminary projections released in January, 1974 projected total population for the T.A.R.M.S. Area (which is essentially the same as the COLUC Area) for the years 1981, 1991 and 2001. Similarly, the Economics and Statistics Division of Central Mortgage and Housing Corporation (CMHC) has prepared

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*This is a helpfull exercise since the technique for converting population into households used in this study is based upon data and projections contained in the CMHC study which projects population and households in 1986 for the Hamilton and Toronto Census Metropolitan Areas; moreover the Metropolitan Toronto Planning Board, based on its population projections, has made household projections for the year 2001.

preliminary population projections for the Toronto and Hamilton Census Metropolitan Areas (these two areas combined are smaller than the COLUC Area) for the years 1981 and 1986.

The Planning Board projection of total population for the T.A.R.M.S. Area for the year 2001 is virtually the same as the COLUC projection. In contrast, the CMHC projection for the combined Toronto and Hamilton Census Metropolitan Areas in 1986 is slightly higher than the COLUC figure although total population in 1971 was about 6 percent less.

The COLUC Support Staff projections indicate that the COLUC Area population will become "older" over both the 1971-1986 and 1986-2001 periods (Table A-3). Between 1971 and 1986 the proportion of the population in the "0-14" and "15-24" age groups is expected to decline while the proportion of the population is all other age groups with the exception of the "45-54" group will increase; between 1986 and 2001 the proportion of the population in the three age groups under 35 is expected to decline while the proportions for the other age groups will increase.

While the age composition of the population of the COLUC Area and the Toronto-Hamilton Census Metropolitan Areas are very similar in 1971, this is not the case for the COLUC and CMHC projections for 1986. The major difference is that the CMHC projection anticipates that a significantly greater share of the 1986 total population will be in the "25-34" age group. While

Table A-3: COMPARISON OF ALTERNATIVE AGE DISTRIBUTIONS OF POPULATION, COLUC AND TORONTO-HAMILTON AREAS, SELECTED YEARS, 1971-2001

	COLUC Area			Toronto + Hamilton Census Metropolitan Areas(1)	
	1971	1986	2001	1971	1986
			Percent		
0-14	27.4	23.1	19.2	27.2	21.2
15-24	17.6	15.3	14.4	17.6	16.5
25-34	14.8	16.8	14.9	15.0	21.6
35-44	13.3	15.6	16.2	13.4	15.4
45-54	11.3	10.9	14.3	11.4	9.4
55-64	7.9	9.4	10.0	7.9	8.2
65 and over	7.7	8.9	11.0	7.6	7.6
Total	100.0	100.0	100.0	100.0	100.0
			000's of Persons		
0-14	911	1,013	1,090	849	936
15-24	585	671	818	551	728
25-34	492	737	846	468	957
35-44	442	684	920	418	684
45-54	376	478	812	355	418
55-64	263	412	568	246	362
65 and over	256	390	624	239	339
Total	3,325	4,386	5,678	3,126	4,423

(1) Preliminary.

Sources: COLUC Support Staff and Economics and Statistics Division, Central Mortgage and Housing Corporation.

it is beyond our scope to probe reasons for these differences in the expected age distribution of the population in 1986, the COLUC Task Force may wish to review this matter. The age composition of the population is an important factor underlying household formation and housing requirements by type.

2. HOUSEHOLD/POPULATION RATIOS BY AGE GROUP

The Economics and Statistics Division of CMHC has prepared preliminary projections of total family and non-family households in 1986 for the Toronto and Hamilton Census Metropolitan Areas. These projections form the basis for the 1986 household projections used in our study; the 2001 projections are derived by the consultant primarily from information presented in the CMHC study.

From the CMHC study household/population ratios were calculated for family and non-family households separately for 6 age groupings for the years 1956, 1971 and 1986 for Ontario and the years 1971 and 1986 for the combined Hamilton and Toronto Census Metropolitan Areas (Table A-4). Data for Ontario are included since census boundary changes mean that a trend could not be established over the 1956-1971 period for the Hamilton-Toronto Census Metropolitan Areas.

In Ontario over the 1956-1971 period, and probably in

Table A-4: RATIO OF HOUSEHOLDS TO POPULATION BY AGE GROUP, ONTARIO AND COMBINED TORONTO AND HAMILTON CENSUS METROPOLITAN AREAS, SELECTED YEARS, 1956-2001

	Ontario			Hamilton and Toronto CMAs		
	Ratio of Households by Age of Head to Population in Each Age Group			Ratio of Households by Age of Head to Population in Each Age Group		
	1956	1971	1986(1)	1971	1986(1)	2001
Non-Family Households						
15-24	.007	.031	.075	.039	.088	.130
25-34	.015	.052	.118	.069	.168	.168
35-44	.023	.039	.053	.048	.080	.080
45-54	.050	.059	.063	.064	.079	.080
55-64	.099	.124	.142	.124	.156	.160
65+	.178	.243	.333	.248	.339	.370
	.050	.077		.082		
Family Households						
15-24	.059	.078	.091	.073	.071	.071
25-34	.322	.390	.458	.365	.422	.422
35-44	.414	.462	.504	.457	.489	.490
45-54	.434	.456	.470	.457	.488	.490
55-64	.412	.431	.447	.420	.476	.480
65+	.337	.312	.290	.287	.283	.260
	.320	.329		.323		
Total Households						
15-24	.066	.108	.166	.112	.159	
25-34	.337	.442	.575	.434	.590	
35-44	.437	.501	.557	.505	.569	
45-54	.484	.516	.533	.520	.567	
55-64	.512	.555	.590	.545	.632	
65+	.515	.566	.623	.535	.622	
	.370	.407		.405		

(1) Preliminary.

Source: John S. Kirkland, Demand for Housing in Canada (Ottawa: CMHC, 1973) and estimates by consultant.

the COLUC Area as well, the ratios of households to population increased for both family and non-family households and for most age groups. The sharpest increases occurred in the non-family household/population ratios, particularly for the "15-24" and "25-34" age groups.

Over the 1971-1986 period the CMHC study indicates that non-family households/population ratios will continue to rise sharply especially in the age groups below the age of 45 and the "65 and over"age group. Generally, only moderate changes are expected to occur in the family household/population ratios.

For the year 2001 it is assumed that the household/population ratios with three exceptions will remain at their 1986 levels. The exceptions are that the non-family household/population ratios for the "15-24" and "65 and over" age groups are assumed to be higher than in 1986 while the family household/population ratio for the "65 and over" age group is assumed to be slightly lower. The other ratios are held constant since if allowance is made for the fact that most family housholds have two adults of about the same age, virtually all adults in 1986 would be the head of a family or non-family household or the spouse of a family head.

3. HOUSEHOLDS BY AGE GROUP, 1986 AND 2001

Total non-family and family households by age of household

head in the years 1986 and 2001 are calculated by muliplying the projected population in each age group (Table A-3) by the household/population ratios (Table A-4).

Total households in the COLUC Area are expected to increase from approximately 985,000 in 1971 to about 1,700,000 and 2,400,000 households in 1986 and 2001 respectively (Table A-5).

The growing relative importance of non-family households which has characterized the postwar period throughout the country is expected to continue in the COLUC Area over the 1971-2001 period (Table A-6). Non-family households as a proportion of total households in the COLUC Area are projected to increase from an estimated 20 percent in 1971 to nearly 28 percent in 1986 and to about 29 percent in 2001.

If the CMHC age distribution of the 1986 population for the Toronto-Hamilton Census Metropolitan Areas is applied to the COLUC Support Staff projection of 1986 COLUC Area population, the 1986 projection of total households is only about 1 percent higher than the projection derived here. However, the composition of households by age of head according to the two projections vary significantly; the major impact of the CMHC distribution of the population in 1986 therefore is on the type of housing required rather than on total housing requirements.

Comparison of the preliminary 2001 household projections of the Metropolitan Toronto Planning Board with the projections derived here shows that the projections of family households

Table A-5: ESTIMATED TOTAL FAMILY AND NON-FAMILY HOUSEHOLDS, COLUC AREA, SELECTED YEARS, 1971-2001

	Number of Households		
	1971	1986	2001
Non-Family Households			
15-24	22,949	58,730	105,712
25-34	34,309	123,113	141,356
35-44	21,388	54,438	73,185
45-54	24,228	37,561	64,602
55-64	32,653	63,964	90,352
65 and over	63,843	131,606	229,833
	199,370	469,412	705,040
Family Households			
15-24	42,955	49,384	57,735
25-34	181,489	309,248	355,072
35-44	203,632	332,751	448,259
45-54	172,626	232,024	395,685
55-64	110,599	195,173	271,056
65 and over	73,882	109,866	161,504
	785,183	1,226,446	1,689,311
Total Households			
15-24	65,904	106,114	163,447
25-34	215,798	432,361	496,428
35-44	225,020	387,189	521,444
45-54	196,854	269,585	460,287
55-64	143,515	259,138	361,408
65 and over	137,725	241,472	391,337
	984,816	1,695,859	2,394,351

Source: Tables A-3 and A-4.

Table A-6: HOUSEHOLDS BY TYPE AND AVERAGE SIZE, COLUC AREA, SELECTED YEARS, 1961-2001

	Households by Type			Average Persons Per Household
	Family	Non-Family	Total	
	Percent			
1961	87.1	12.9	100.0	3.8
1971	81.1	18.9	100.0	3.4
1971(1)	79.7	20.3	100.0	3.4
1986	72.3	27.7	100.0	2.6
2001	70.6	29.4	100.0	2.4

(1) This breakdown is an estimate based upon applying the 1971 household/population ratios for the Toronto-Hamilton Census Metropolitan Areas to the COLUC Area 1971 population.

Source: Statistics Canada, Census of Canada, 1961 and 1971 and Tables A-1 and A-5.

are very similar (the projections here are about 5 percent higher). For non-family households our projections are sharply higher -- by almost 40 percent. Hence, our projection of total households in 2001 is some 13 percent above the Planning Board projections.

It should be noted that the distribution of total households between family and non-family households in 1971 which is used as the base for the 1986 and 2001 household projections differs slightly from the actual distribution of family and non-family households in the COLUC Area in 1971. Applying the household/population ratios by age of household head for the Toronto-Hamilton Census Metropolitan Areas to the 1971 COLUC Area population slightly overstates the number of non-family households in the Area.

TECHNICAL APPENDIX B

ANALYSIS OF TRENDS IN HOUSING STARTS BY TYPE IN THE COLUC AREA

The purpose of this analysis is to identify and try to explain trends in the composition of housing starts in the COLUC Area over the last 15 or so years. Interest is especially centred on two phenomena: (a) that over most, if not all, of the postwar period apartments accounted for a much higher share of total housing starts in the COLUC Area than in many other parts of the country; and (b) that the COLUC Area in the late 1950's and the decade of the 1960's in common with other larger urban areas in Canada experienced a pronounced shift to apartments in the mix of new housing starts.

The results of this analysis are then used as a basis for translating the household projections derived in Technical Appendix A into housing requirements by type (see Technical Appendix D).

A type of comparative analysis is used to examine trends in the composition of housing starts in the COLUC Area. Trends in the COLUC Area are compared with those in three other larger urban areas (the Calgary, Kitchener and Winnipeg Census Metropolitan Areas) and Ontario and Canada. These three urban areas were chosen since their census boundaries did not

change between 1961 and 1971 and they encompass areas having both rapidly growing and slow growing populations.

Two approximations of the COLUC Area are used in the analysis. Approximation 1 consists of the 6 counties within the COLUC Area -- Durham, Halton, Ontario, Peel, Wentworth and York. Since the boundaries of this 6 county area are esentially the same as those of the COLUC Area and the boundaries of these counties have remained more or less the same over the last several years, data for Approximation 1 best portrays trends in the COLUC Area. Unfortunately only rudimentary census housing data are published on a county basis. For much of the analysis it has been necessary to examine data for the combined Toronto and Hamilton Census Metropolitan Areas and the Oshawa Census Agglomeration (Approximation 2). These data are less satisfactory since the area boundaries were revised in the 1971 Census; however they have the advantage of being more comprehensive than the county data. Where data are available for both approximations of the COLUC Area they are included in the statistical tables in order to indicate the nature of biases introduced by using Approximation 2.

1. HOUSING STARTS AND HOUSING STOCK TRENDS

An examination of trends in housing starts by type over the past two decades in the COLUC Area reveals several interesting

features (Table B-1).* Firstly, apartments have been a prominent component of total housing starts as far back as the early 1950's accounting for about one-third of total starts at that time. Secondly, during the late 1950's and the decade of the 1960's apartment starts as a proportion of total housing starts moved sharply upward. This was part of a nation-wide trend. Thirdly, apartment starts as a proportion of total starts declined sharply during the early years of the 1970's. Again, this relative decline in apartment starts appears to be a nation-wide phenomenon. Lastly, semi-detached, duplex and row dwelling units in the early 1970's accounted for a significantly greater share of total housing starts in the COLUC Area than in the earlier periods.

Compared with the other areas surveyed, the COLUC Area over the entire 1961-1973 period has had relatively fewer single-detached house starts and relatively more semi-detached, duplex, row and apartment starts (Table B-2). If starts of family-type accommodation are approximated by dwelling starts other than apartment starts, over this period the COLUC Area has produced relatively fewer family-type units than the other

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*There are no readily available comprehensive data on past trends in total housing starts in the COLUC Area. CMHC starts data do not cover rural or smaller urban areas outside the Toronto and Hamilton Census Metropolitan Areas and Oshawa Census Agglomeration. This gap in addition to understating total starts by an unknown amount probably overstates the proportion of total starts for the Area which are apartments.

Table B-1: HOUSING STARTS BY TYPE, COLUC AREA,(1) SELECTED PERIODS, 1952-1973

	Percent					Apartments as a Percent of Total Starts	
	Single-Detached	Semi-Detached and Duplex	Row	Apartment	Total	Ontario	Canada
1952-55	64.9	3.4	--	31.7	100.0	(2)	21.7
1956-60	48.3	7.0	0.9	44.1	100.0	25.8	25.0
1961-65	32.3	7.6	4.6	55.7	100.0	42.9	39.3
1966-70	22.5	6.8	7.0	63.7	100.0	48.7	48.2
1971-73	24.8	11.2	10.6	53.5	100.0	46.0	42.1

(1) Approximation 2. See text for definitions of Approximations 1 and 2.
(2) Not readily available.

Source: Central Mortgage and Housing Corporation.

Table B-2: HOUSING STARTS BY TYPE, COLUC AND OTHER AREAS, SELECTED PERIODS 1961-1973

Percent

	Single-Detached				Semi-Detached and Duplex				Row			
	1961-65	1966-70	1971-73	1961-73	1961-65	1966-70	1971-73	1961-73	1961-65	1966-70	1971-73	1961-73
COLUC AREA Approximation 2	32.3	22.5	24.8	26.2	7.6	6.8	11.2	8.3	4.6	7.0	10.6	7.3
Calgary	57.8	40.9	54.7	49.9	7.0	8.1	6.1	7.2	0.7	4.9	7.3	4.4
Kitchener	45.3	36.6	32.8	37.6	3.3	7.4	9.1	6.9	1.1	9.5	11.3	7.8
Winnipeg	51.9	30.4	33.3	37.3	5.1	6.2	7.0	6.2	3.2	6.3	4.2	4.7
Ontario	46.7	37.5	36.8	40.0	6.5	5.9	7.8	6.7	3.9	7.9	9.4	7.2
Canada	51.7	41.0	45.9	45.8	6.4	5.4	5.4	5.7	2.7	5.4	6.6	4.9

	Single-Detached, Semi-Detached and Duplex and Row				Apartments				Total			
	1961-65	1966-70	1971-73	1961-73	1961-65	1966-70	1971-73	1961-73	1961-65	1966-70	1971-73	1961-73
COLUC Area Approximation 2	44.5	36.3	46.6	41.8	55.7	63.7	53.5	58.2	100.0	100.0	100.0	100.0
Calgary	65.5	53.9	68.1	61.5	34.5	46.1	31.9	38.5	100.0	100.0	100.0	100.0
Kitchener	49.7	53.5	53.2	52.3	50.3	46.5	46.8	47.6	100.0	100.0	100.0	100.0
Winnipeg	60.2	42.9	44.5	48.2	39.8	57.2	55.8	51.9	100.0	100.0	100.0	100.0
Ontario	57.1	51.3	54.0	53.9	42.9	48.7	46.0	46.1	100.0	100.0	100.0	100.0
Canada	60.8	51.8	57.9	56.4	39.3	48.2	42.1	43.5	100.0	100.0	100.0	100.0

Source: Central Mortgage and Housing Corporation.

areas.*

As a consequence of the shift in the composition of housing starts over the past several years, in all areas surveyed the proportion of single-detached houses in the total occupied housing stock declined between 1961 and 1971 (Table B-3).**

2. INCREASED ROLE OF NON-FAMILY HOUSEHOLDS

A major cause of the relative shift to apartments in both the COLUC Area and elsewhere during the 1960's has been the rapid growth in non-family households. While the proportion of households which were non-family households increased slightly over the 1950's, it was not until the 1960's, especially the last half of the decade, that a very rapid increase in the number of non-family households took place. As non-family households are more likely to occupy apartment accommodation, this shift to non-family households produced a corresponding shift in the proportion of new housing starts which were apartments.

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*In the COLUC Area, in recent years at least, very few apartment starts have been of the low-rise variety which are often considered to be suitable family type accommodation. For instance, in the Hamilton - Toronto Census Metropolitan Areas over the last 4 years 87 percent of all apartment starts were in structures of more than 100 units.

**Statistics Canada staff indicate that the only reliable breakdown of occupied housing by type of structure from the 1971 Census is between single-detached dwellings and "other". Apparently many respondents on this first self-enumeration census erred in answering the question related to type of housing occupied. One common error apparently was for apartment residents to reply that they lived in a single-attached dwelling.

Table B-3: SINGLE-DETACHED DWELLINGS AS A PROPORTION OF TOTAL OCCUPIED DWELLINGS, COLUC AND OTHER AREAS, SELECTED PERIODS, 1961-1971

Percent

	Single-Detached Dwellings as a Percent of Total Occupied Dwellings			Increase in Single-Detached Dwellings as a Percent of Increase in Total Occupied Dwellings		
	1961	1966	1971	1961-66	1966-71	1961-71
COLUC Area						
Approximation 1	61.3	56.0	50.4	30.7	26.3	28.2
Approximation 2	59.7	54.2	48.7	29.7	31.2	30.6
Calgary	64.8	63.6	60.3	58.1	48.2	52.0
Kitchener	70.4	63.9	58.1	38.6	35.5	36.9
Winnipeg	70.3	67.6	63.4	44.6	36.9	39.9
Ontario	69.5	65.7	61.4	39.1	38.0	38.5
Canada	65.4	62.4	59.5	40.8	41.9	41.4

Source: Statistics Canada, Census of Canada.

In the COLUC Area non-family households accounted for over 36 percent of the increase in total households in the last half of the 1960's compared with only 17 percent in the 1950's (Table B-4). Similar increases in the importance of non-family households took place in the other areas.

While the relative growth of non-family households undoubtedly has been an important factor behind the shift in the composition of housing starts to apartments, it is by no means the only factor. To illustrate, in the last half of the 1960's apartments accounted for 64 percent of new housing starts in the COLUC Area yet only 36 percent of the increase in total households were non-family households. Clearly, many families in the COLUC Area reside in apartments -- the extent to which this may be a matter of choice or of economic necessity is considered later in the analysis.

3. TREND TOWARD FAMILIES LIVING IN APARTMENTS[*]

Two alternative indicators are employed in an effort to

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[*] The analysis here is directed at discovering the types of housing and trends therein occupied by family and non-family households by age of household head. As census data are available for dwelling type cross-classified by age of head for all households only (i.e., not for family and non-family households separately) a comprehensive analysis was not possible.

What is done here is to relate various available measures of family-type accommodation to total family households and family households by age of head. Implicitly then it is assumed that non-family households do not occupy family-type accommodation; however, many non-family households, particularly the elderly do reside in single-detached houses so this assumption is not entirely correct.

Table B-4: HOUSEHOLDS BY TYPE, COLUC AND OTHER AREAS, SELECTED YEARS, 1961-1971

Percent

	Non-Family Households as a Percent of Total Households				Increase in Non-Family Households as a Percent of Increase in Total Households			
	1951	1961	1966	1971	1951-61	1961-66	1966-71	1961-71
COLUC Area								
Approximation 1		12.9	15.0	18.9		24.9	35.7	31.1
Approximation 2	10.0	12.9	15.1	19.0	17.3	25.2	33.1	30.0
Calgary	15.9	16.6	19.4	21.1	17.3	29.0	28.7	28.8
Kitchener		12.4	14.3	16.6		21.6	25.9	24.0
Winnipeg	9.8	13.8	17.3	21.8	25.4	47.5	50.2	49.1
Ontario	11.3	13.3	15.2	18.1	18.3	28.9	33.3	31.5
Canada	11.3	13.3	15.5	18.3	19.3	31.7	35.3	33.8

Source: Statistics Canada, *Census of Canada*.

identify the overall relationship between increases in the stock of family type accommodation and increases in the number of family households in the COLUC and other areas.

Table B-5 shows that whether family-type housing is approximated by only single-detached houses or whether semi-detached, duplex, and row units are also considered, the production of new family-type housing in the COLUC Area over the 1960's lagged far behind the increase in family households compared with the other areas surveyed. The ratio of single-detached, semi-detached, duplex, and row starts to the increase in family households in the COLUC Area was only 57 percent compared to 86 percent for Ontario and 120 percent for Winnipeg. What this means is that over the 1960's the COLUC Area produced only 57 new housing units of these types for every 100 increase in family households compared to 86 units for Ontario and 120 for Winnipeg.

Census data relating the increase in the stock of occupied single-detached dwellings to the increase in family households point to a similar conclusion -- that the COLUC Area over the 1960's produced fewer additional houses per 100 increase in family households than the other selected areas (Table B-6).

Turning to the relationship between the stock of family-type housing and number of family households by age of household head in 1971, in both the COLUC Area and the other areas the ratios increase rapidly up to the "35-44" age group; the ratios also increased but at a slower rate up to the "65 and over" age

Table B-5: SINGLE-DETACHED, SEMI-DETACHED AND DUPLEX AND ROW STARTS AND FAMILY HOUSEHOLDS, COLUC AREA AND SELECTED OTHER AREAS, 1961-1971

Percent

	Selected Types of Housing Starts as a Percent of Increase in Family Households		
	Single-Detached	Semi-Detached, Duplex and Single-Detached	Single-Detached, Semi-Detached, Duplex and Row
COLUC Area Approximation 2	38.0	48.2	56.7
Calgary	82.3	95.5	99.0
Kitchener	59.1	67.5	76.3
Winnipeg	94.2	107.7	119.7
Ontario	66.0	75.9	85.7
Canada	76.0	85.7	92.6

Source: Statistics Canada, Census of Canada and Central Mortgage and Housing Corporation.

Table B-6: SINGLE-DETACHED DWELLINGS AND FAMILY HOUSEHOLDS, COLUC AND OTHER AREAS, SELECTED YEARS 1961-1971

Percent

	Single-Detached Dwellings as a Percent of Family Households			Increase in Single-Detached Dwellings as a Percent of Increase in Family Households		
	1961	1966	1971	1961-66	1966-71	1961-71
COLUC Area						
Approximation 1	70.4	65.8	62.1	40.9	40.8	40.8
Approximation 2	86.5	63.8	60.8	38.9	47.2	43.7
Calgary	77.7	78.9	76.3	86.0	65.9	73.3
Kitchener	80.3	74.5	69.7	49.2	47.8	48.5
Winnipeg	81.6	81.8	81.0	84.9	73.4	78.1
Ontario	80.2	77.5	74.8	55.1	56.6	55.9
Canada	75.4	73.9	72.8	59.8	64.2	62.3

Source: Statistics Canada, Census of Canada.

group (Tables B-7 and B-8)*

In virtually every instance, the ratios in each age group are lower for the COLUC Area then for the other selected areas. This would seem to suggest that the explanation for the relatively low quantity of new family-type housing accommodation constructed in the COLUC Area may be attributable to some pervasive influence such as a relatively higher housing cost structure.

Tables B-9 and B-10 examine changes in the ratios of family-type accommodation to family households between the years 1961 and 1971 in the COLUC Area and other selected areas.** It appears that the proportion of families living in family-type accommodation declined in all the areas surveyed. The decline was largest for the COLUC Area and Kitchener.

In all areas substantial declines took place in the family-type housing/family households ratios in the "Under 25" age group. It should be recalled though that relatively few families in this age group in the past have lived in family-type

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*While it would have been preferable to approximate family-type accommodation by combining single-detached and single-attached dwellings this was not done in light of Statistics Canada concern about the reliability of single-attached dwelling data. Instead family-type accommodation is approximated by two alternative series -- single-detached dwellings and owner-occupied dwellings.

**For both 1961 and 1971 the ratio of total single-detached or owner-occupied dwellings occupied by all households in each age group to the number of family households in the age group is calculated. The percentage change in these ratios is what is shown in Tables B-9 and B-10.

Table B-7: OCCUPIED SINGLE-DETACHED DWELLINGS AND FAMILY HOUSEHOLDS BY AGE OF HOUSEHOLD HEAD, COLUC AND OTHER AREAS, 1971

Percent

	Single-Detached Dwellings as a Percent of Family Households						
	Age of Family Household Head						
	Under 25	25-34	35-44	45-54	55-64	65 and over	Total
COLUC Area Approximation 2	18.0	39.6	62.2	70.4	73.2	86.0	60.2
Calgary	29.3	57.4	83.2	88.1	93.0	110.1	76.3
Kitchener	16.6	47.3	75.1	83.1	88.3	108.8	69.7
Winnipeg	31.4	60.9	84.2	90.0	94.6	105.9	81.0
Ontario	29.7	53.9	73.6	81.3	88.3	112.5	74.8
Canada	34.8	53.5	72.0	78.3	84.3	105.2	72.8

Source: Statistics Canada, Census of Canada.

Table B-8: OWNER-OCCUPIED DWELLINGS AND FAMILY HOUSEHOLDS BY AGE OF HOUSEHOLD HEAD, COLUC AREA AND SELECTED OTHER AREAS, 1971

Percent

	Owner-Occupied Dwellings as a Percent of Family Households						
	Age of Family Household Head						
	Under 25	25-34	35-44	45-54	55-64	65 and over	Total
COLUC Area Approximation 2	11.1	44.0	73.1	80.8	85.5	106.0	69.6
Calgary	12.9	48.4	78.2	86.1	96.4	118.4	71.9
Kitchener	11.4	47.4	76.9	85.3	94.1	118.8	71.9
Winnipeg	15.0	50.2	77.5	86.9	94.1	107.1	75.5
Ontario	17.0	50.4	76.2	85.2	94.4	122.2	76.7
Canada	20.3	48.3	72.9	82.1	90.7	113.5	73.7

Source: Statistics Canada, Census of Canada.

Table B-9: OCCUPIED SINGLE-DETACHED DWELLINGS AND FAMILY HOUSEHOLDS BY AGE OF HOUSEHOLD HEAD, COLUC AND OTHER AREAS, 1961-1971

Percent

	Percent Change in Ratio of Single-Detached Dwellings to Family Households, 1961-1971						
	Under 25	25-34	35-44	45-54	55-64	65 and over	Total
COLUC Area Approximation 2	-30.0	-28.1	-10.2	-3.3	-1.4	5.4	-11.1
Calgary	-27.5	-13.6	2.5	5.4	11.5	13.9	- 1.8
Kitchener	-42.4	-28.2	- 5.4	-3.2	-5.7	2.4	-13.2
Winnipeg	-15.6	-12.5	0.4	4.3	7.9	12.5	- 0.7
Ontario	-29.1	-17.6	- 5.4	-1.9	-1.2	4.6	- 6.7
Canada	-24.5	-12.6	- 1.6	1.3	1.6	3.8	- 3.4

Source: Statistics Canada, *Census of Canada*.

Table B-10: OWNER-OCCUPIED DWELLINGS AND FAMILY HOUSEHOLDS BY AGE OF HOUSEHOLD HEAD, COLUC AND OTHER AREAS, 1961-1971

Percent

	Percent Change in Ratio of Owner-Occupied Dwellings to Family Households, 1961-1971						
	Under 25	25-34	35-44	45-54	55-64	65 and over	Total
COLUC Area Approximation 2	-44.5	-25.3	-5.4	-4.5	-7.5	-3.2	-11.7
Calgary	-51.9	-15.7	3.4	1.6	0.4	0.2	- 5.3
Kitchener	-48.9	-25.2	-1.9	-3.1	-8.0	-1.3	-12.8
Winnipeg	-31.2	-13.4	-0.6	3.2	3.9	9.6	- 2.4
Ontario	-35.4	-14.0	-0.2	-0.8	-3.7	0.6	- 5.7
Canada	-30.2	- 9.4	1.8	1.2	-1.2	1.1	- 3.2

Source: Statistics Canada, Census of Canada.

accommodation.

More significantly, the ratios in the "25-34" age group, traditionally regarded as the prime home-buying age group, also declined sharply in all areas during the 1960's. The COLUC Area and Kitchener experienced the largest declines.

In the "35-44" age group declines were recorded for most areas. The decline was largest in the COLUC Area.

In the "45-54" and "55-64" age groups the COLUC Area, Kitchener and Ontario recorded declines. For the "65 and over" age group the ratios increased for most areas, reflecting the fact that many elderly non-family households reside in family-type accommodation.

In summary, over the 1960's it appears that a general decline took place in the number of younger families residing in family-type accommodation. Declines in the important "25-34" home-buying age group were largest in the COLUC Area and Kitchener. Declines also occurred in the age groups between the ages of 35 and 64 in the COLUC Area, Kitchener and Ontario, while the other areas experienced modest increases in some, if not all, of these age groups.

4. TRENDS IN HOUSING COSTS AND INCOMES

An important consideration in assessing the mix of new

housing starts is the relationship of housing costs to income.*

Table B-11 indicates that the rent/family income ratios in 1971 were fairly similar in the areas surveyed. While the ratio was highest for the COLUC Area, it was only about 7 percent above the national average. In contrast, marked differences between areas characterized the house value/family income ratio. This ratio for the COLUC Area in 1971 was considerably above the other areas. Kitchener and Ontario ranked second to the COLUC Area as areas in which house values were high relative to incomes.

Table B-12 contains data on increases in homeownership costs,** rents and family incomes between the years 1961 and 1971 for the survey areas. In all areas, estimated carrying charges associated with the median value house outpaced increases in median gross rent over the period; _i.e._, the cost of home-ownership housing became more expensive compared to rental housing.

Increases took place in the ratio of estimated carrying

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*The importance of centering attention on the relationship of housing costs to family income is illustrated in Table B-11. While median house value and rent in 1971 were substantially higher in the COLUC Area than in the other areas surveyed, average family income in the COLUC Area was also considerably higher.

**Two series of home-ownership costs are considered: (a) the increase in median house value and (b) the increase in estimated carrying charges (mortgage interest and principal and property taxes) associated with the median value house in 1961 and 1971. As mortgage interest rates increased over the 1961-1971 period, the increase in (b) is larger than the increase in (a).

Table B-11: HOUSING COSTS AND INCOME, COLUC AND OTHER AREAS, 1971

	Average Census Family Income 1970	Median Value of Single-Detached House 1971	Median Annual Gross Rent 1971	Ratio of Median Housing Costs to Average Family Income	
				House Value	Gross Rent
	Dollars			Percent	
COLUC Area					
Approximation 1		30,364	1,807		
Approximation 2	11,619	30,634	1,819	2.64	0.16
Calgary	10,943	22,461	1,632	2.05	0.15
Kitchener	10,661	23,968	1,548	2.25	0.14
Winnipeg	9,989	17,780	1,356	1.78	0.14
Ontario	10,661	23,768	1,632	2.23	0.15
Canada	9,600	19,020	1,404	1.98	0.15

Source: Statistics Canada, Census of Canada.

Table B-12: HOUSING COSTS AND INCOME, COLUC AND OTHER AREAS, 1961-1971

	Increase in Median Value of Single-Detached House 1961-1971 (1)	Increase in Average Annual Gross Rent 1961-1971	Increase in Average Census Family Income 1961-1970	Ratio of Increase in Median House Value to Increase in Average Gross Rent (1)	Ratio of Increase in Housing Costs to Increase in Average Census Family Income	
	Percent				Median House Value (1)	Average Gross Rent
COLUC Area Approximation 2	86.2(121.2)	45.8	80.6	1.88(2.65)	1.07(1.50)	0.57
Calgary	51.2(78.8)	60.0	72.3	0.85(1.31)	0.71(1.09)	0.83
Kitchener	93.4(130.0)	80.3	80.4	1.16(1.62)	1.16(1.62)	1.00
Winnipeg	36.8(61.8)	46.8	70.0	0.79(1.32)	0.52(.88)	0.67
Ontario	83.5(117.4)	57.5	81.7	1.45(2.04)	1.02(1.44)	0.70
Canada	72.6(104.1)	55.8	76.2	1.30(1.87)	0.95(1.37)	0.73

(1) The figures included in brackets relate to the estimated carrying charges (mortgage interest and principal and property taxes) associated with the median value house.

Source: Statistics Canada, Census of Canada.

charges associated with the median value house to family income over the 1961-1971 decade in all areas except Winnipeg. Increases were greatest in Kitchener, the COLUC Area, Ontario and Canada. In the COLUC Area the increase in carrying charges associated with the median value house was 50 percent more than the increase in family incomes.

The rise in the homeownership cost to family income ratio resulted in fewer families being able to afford to purchase a median value house in 1971 compared to 1961 in the areas surveyed except for Calgary and Winnipeg (Table B-13). In the COLUC Area about 63 percent of families could not afford to purchase a median value house in 1971 compared to about 52 percent in 1961.

5. FACTORS UNDERLYING TRENDS IN THE COMPOSITION OF HOUSING STARTS IN THE COLUC AREA

A number of trends in the composition of housing starts in the COLUC Area over the past decade or so have been identified. These include:

(a) Compared with selected other areas the share of total housing starts accounted for by apartments has been consistently much greater in the COLUC Area;

(b) A marked switch to a relatively larger number of

Table B-13: ESTIMATED PROPORTION OF FAMILIES UNABLE TO AFFORD MEDIAN VALUE HOUSE, COLUC AND OTHER AREAS, 1961-1971(1)

	Percent 1961	Percent 1971	Percent Change 1961-1971
COLUC Area Approximation 2	51.5	63.1	22.5
Calgary	52.6	46.3	-12.0
Kitchener	30.5	49.8	63.3
Winnipeg	41.7	35.2	-15.6
Ontario	40.2	51.6	28.4
Canada	36.7	45.0	22.6

(1) These estimates are based on the premise that families which would have to spend more than 30 percent of their income for carrying charges in order to purchase the median value house cannot afford to purchase a home.

Source: Statistics Canada, Census of Canada.

apartment starts in the late 1950's and throughout the 1960's;

(c) A relative swing away from apartment starts in the early 1970's; and

(d) A sharp upswing in the proportion of total starts in the early 1970's in the form of semi-detached, duplex and row dwellings.

The relatively large proportion of apartment starts over the entire period as well as the upsurge in semi-detached, duplex and row starts in the early 1970's are trends which appear to be rather unique to the COLUC Area. In contrast, the trends toward increased apartment construction during the 1960's and away from apartment construction in the initial years of the 1970's appear to have happened in most housing markets across the country.

The fact that the COLUC Area has consistently produced a larger proportion of its new housing in the form of apartments over the past couple of decades could be the result of several forces including: (a) a relatively larger proportion of non-family households which in turn tend to prefer apartment accommodation; (b) relatively higher costs for family-type accommodation compared to apartments; (c) relatively higher costs of family-type accommodation compared to family incomes; and (d) a less strong preference by families for traditional family-type accommodation.

It does not appear that the COLUC Area has a disproportionately large number of non-family households compared with other areas. Moreover, while families in the COLUC Area may be more inclined to live in apartment accommodation, it is unlikely that family preferences are a major reason why the Area has built relatively more apartments. The dominant forces appear to be the relatively high cost of single-detached houses compared with average family income and, in recent years at least, the sharp rise in the carrying costs associated with the purchase of a house compared with rents in the COLUC Area.

The widespread swing toward apartment starts in the late 1950's and through the 1960's largely reflected the rapid growth in non-family households over the period. In all areas surveyed non-family households increased much more rapidly than family households over this period. In addition, it also appears that an increasing share of families in the 1960's deliberately chose to live in apartments. Younger married couples in particular, a rapidly growing segment of the population in the 1960's, generally preferred, at least initially, to live in apartments. The sharp declines in the ratios of family-type accommodation to family households in the younger age groups between 1961 and 1971, even in areas such as Calgary and Winnipeg where increases in home-ownership costs did not significantly outpace increases in family incomes, support this position.

In some areas such as the COLUC Area and Kitchener however, it is probably the case that many families who preferred to live in family-type accommodation and, in other areas who could probably afford to do so, could not afford to purchase a home in the 1960's. The sharper declines in the ratios of family-type accommodation to family households in the younger age groups and the declines in the other age groups up to the "65 and over" group between 1961 and 1971 in these areas are probably the result of an increasing home-ownership cost/income squeeze.

The switch in the composition of new housing starts away from apartments in the early 1970's reflects a resurgence of demand by families for family-type accommodation. While newly-formed families in the 1960's tended initially to prefer apartment accommodation, these families now apparently desire to own their own home. In many parts of the country families are able to afford single-detached houses. But in the COLUC Area the high price of single-detached houses (compared with incomes) in the early 1970's has meant that many families have had to substitute semi-detached and row housing for the single-detached house. Hence, the production of these forms of housing in the COLUC Area increased rapidly in recent years.

6. CONCLUSION

In spite of generally higher levels of family income in

the COLUC Area, it appears that over the past decade or two many families who would prefer to live in family-type accommodation, and who could do so in many other parts of the country, have had to occupy apartments. In recent years almost all new apartment construction in the COLUC Area has been of the high rise variety which many observers do not regard to be a suitable form of family housing.

The trend toward increased apartment construction in the COLUC Area during the 1960's probably reflected the increased role of non-family households in the housing market and a combination of preferences and rising home-ownership costs (relative to incomes) for family households. Increases in the proportion of families residing in apartments during the 1960's was probably about one-third due to preferences and two-thirds to a housing cost/income squeeze.

In the early 1970's it appears that a major switch has taken place in the type of accommodation preferred by families; fewer families now want to live in apartments.

TECHNICAL APPENDIX C

TRENDS IN VACANCY RATES AND NET REPLACEMENT DEMAND IN THE COLUC AREA

While future housing requirements in the COLUC Area will probably be a function primarily of the growth in total households, consideration should be given to two additional components of housing requirements. A certain proportion of the housing stock at any point of time will be vacant, and this proportion will fluctuate according to supply/demand relationships in the housing market. Vacant units may be dwellings which have been previously occupied or newly constructed units.

A second component of housing requirements in addition to net household formation is what is referred to as net replacement demand. This represents the net effect on the supply of housing of losses from the stock of housing due to demolitions, fires, abandonment, conversions of residential structures to non-residential uses etc. and additions to the housing stock from conversions of non-residential structures to residential uses, etc. Unfortunately however our understanding of the dynamics of housing stock changes is not very far advanced.

1. VACANCY RATES

Table C-1 shows that the average overall housing vacancy

rate in the COLUC Area declined to 2.4 percent in 1966 from 3.6 percent in 1961 and then increased to 4.0 percent in 1971.* By type of unit vacancy rates were about the same in both 1961 and 1971. The vacancy rate for single-detached dwellings was 1.6-1.7 percent and the rate for other dwelling types 5.7-5.8 percent.

Table C-1: HOUSING VACANCY RATES, COLUC AREA,(1) SELECTED YEARS, 1961-1971

Vacant Dwellings as a Percent of Total Dwellings	Percent 1961	 1966(2)	 1971
Total	3.6	2.4	4.0
Single-detached dwellings	1.7		1.6
All other dwellings	5.7		5.8

(1) Hamilton and Toronto Census Metropolitan Areas only.
(2) Vacant dwellings by type of dwelling not readily available.

Source: Statistics Canada, Census of Canada.

The fairly high vacancy rate for "other" dwellings in both 1961 and 1971 partially reflects a soft rental market in 1961 and an excess of newly constructed condominiums in 1971. It is apparent however that vacancy rates for apartments will always tend to be higher than the rate for single-detached houses. Typically

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* Data relate to the Toronto-Hamilton Census Metropolitan Areas.

an apartment vacancy rate of around 4-5 percent is considered to be normal. From the data presented in Table C-1 it would appear that the "normal" vacancy rate for single-detached houses in the COLUC Area falls in the 1.5-2.0 percent range.

2. NET REPLACEMENT DEMAND-GENERAL.

Our knowledge of the components and causes of net replacement demand is limited and very little data related to this phenomonon are available. The discussion below brings together what little we know about net replacement demand and probably raises more questions than it answers.

According to CMHC estimates, net replacement demand in Ontario and Canada has been both positive and negative over the 1960's: between 1961 and 1966 net replacement demand as a percentage of total housing requirements in Ontario and Canada amounted to 6.8 percent and 4.0 percent respectively; however, over 1966-1971 it is estimated that net replacement demand for these two areas was a minus 7.8 percent and 9.2 percent of total housing requirements.*

It is useful at this point to refer to the CMHC definition of net replacement demand:

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*John S. Kirkland, Demand for Housing in Canada (Ottawa: CMHC, 1973).

A negative net replacement demand means that more dwellings are added to the dwelling stock through conversions than are lost through demolitions, fire, etc.

> Net replacement demand represents the difference between withdrawals from or losses to the housing stock, and additions to the stock resulting from the conversion of existing dwellings. Any undercounting of housing completions in the intercensal surveys of house-building activity would also appear here as an offset to withdrawals from the housing stock. The data are derived from the difference between new housing completions on the one side and net household formation and the net increase in vacancies reported in the Census, on the other.[*]

Hence net replacement demand is calculated by subtracting net family formation and changes in the number of vacant units from completions of new houses. It is a residual which includes in addition to net changes in the housing stock other than new completions any errors in CMHC completion data or Census data on net family formation or vacancies.

These CMHC estimates of net replacement demand during the 1960's in Ontario and Canada are substantially less than comparable estimates which have made for the same period in the United States. A recent U.S. study estimated that during the 1950's and again in 1960's construction of new dwellings outpaced net household formation by a ratio of 1.5 to 1.0.[**]

For metropolitan areas in the United States the study forecasts that over the 1970's the ratio of housing requirements to net household formation will rise to 1.64 to 1.0. The components

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[*] Central Mortgage and Housing Corporation, Canadian Housing Statistics, 1972.

[**] David Birch et.al., America's Housing Needs: 1970 to 1980 (Cambridge: Joint Center for Urban Studies, 1973).

of total housing requirements over the 1970's are:

	Percent
Net household formation	66.9
Second homes	0.7
Additional vacancies	5.4
Replacement of accidential losses	12.0
Replacement of other units	21.0
	100.0

Roughly one-third of total housing requirements during the 1970's then are attributed to net replacement demand. The comparable CMHC projection for this period is about 8 percent of Canada's total housing requirements.

It is interesting to speculate on the reasons for these large differences between Canada and the United States on the role of net replacement demand during the 1960's, and whether the recent U.S. experience portends an upsurge in net replacement demand in Canada. While it is beyond the scope of the analysis here to delve into these matters, recent research into the housing abandonment phenomenon in the United States suggests that a combination of social and economic forces lie behind the higher net replacement demand in the U.S.*

3. NET REPLACEMENT DEMAND IN THE COLUC AREA

Net replacement demand includes losses from the housing and additions to the stock other than from new residential

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*U.S. Department of Housing and Urban Development, Abandoned Housing Research: A Compendium, 1973.

construction. Limited data for the COLUC Area are available for only one component of net replacement demand -- demolitions.

Over the seven years 1966-1972 approximately 11,000 dwelling units were demolished in the COLUC Area.* Of these most were either single-detached houses (64 percent) or semi-detached and duplex dwellings (17 percent). In addition, over these years there appears to have been a trend toward fewer demolitions (Table C-2).

Most of these demolitions have taken place in the older built-up areas of the COLUC Area. For example, 51 percent of the units demolished were in the City of Toronto and 14 percent in the City of Hamilton.

Demolitions over the seven year period amounted to 1.5 percent of the total housing stock in the COLUC Area in 1966. If this relationship was assumed to hold over a fifteen year period, it would imply that only 3.2 percent of the stock of housing in the COLUC Area at the beginning of the period is removed through demolition.

Demolitions amounted to only 4.4 percent of total housing starts in the 1966-1972 period.

These figures support the conclusion that demolitions in recent years have been a rather insignificant component of

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*Data relate to the Toronto-Hamilton Census Metropolitan Areas.

Table C-2: RESIDENTIAL DEMOLITIONS, COLUC AREA,(1) 1966-1972

	Total	By Type of Dwelling				
		Single-Detached	Semi-Detached and Duplex	Row	Apartment	Total
	Dwelling Units	Percent				
1966	1,830	49.8	26.1	--	24.1	100.0
1967	1,854	55.6	17.2	27.1	--	100.0
1968	1,912	68.2	14.1	7.5	10.2	100.0
1969	1,880	68.4	15.6	6.9	9.1	100.0
1970	1,232	61.8	21.8	4.4	11.9	100.0
1971	1,218	71.8	12.8	4.6	10.8	100.0
1972	1,149	76.4	11.3	3.4	8.9	100.0
1966-72	11,075	63.6	17.3	8.3	10.7	100.0

(1) Hamilton and Toronto Census Metropolitan Areas.

Source: Statistics Canada.

housing requirements in the COLUC Area.

A recent study by the City of Toronto Planning Board provides some insight into the magnitude of net replacement demand in the City over the past two decades.*

Calculations by the consultant from data contained in this study produces some rather unbelievable results (Table C-3). If the figures are to be believed, net replacement demand plus vacancies as a percentage of total housing requirements in the City increased to 41 percent in the first half of the 1960's compared to 14 percent in the 1950's.** Then during the 1966-1971 period net replacement demand plus vacancies plummeted to a minus 46 percent; in other words, in this period the figures suggest that numerous single-detached houses must have subdivided into two or more units and/or numerous non-residential structures were converted to residential uses.

It seems highly unlikely that the very large shifts in the role of net replacement demand plus vacancies indicated in Table C-3 really occurred. What this exercise strongly points to is that much more comprehensive and reliable data are required before Canadian housing analysts are able to reliably estimate past trends or forecast future trends in net replacement demand.

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*City of Toronto Planning Board, Research Section, Changes in the Housing Stock 1951-1971, 1974.

**The study does not present separate figures for net replacement demand and vacancies.

Table C-3: COMPONENTS OF HOUSING REQUIREMENTS IN THE CITY OF TORONTO, SELECTED PERIODS, 1951-1971

	Dwelling Units			Percent		
	1951-1961	1961-1966	1966-1971	1951-1961	1961-1966	1966-1971
New household formation	19,574	7,400	34,314	85.6	59.2	146.0
Net Replacement Demand and Vacancies	3,296	5,096	-10,811	14.0	40.8	-46.0
Demolitions	(6,075)	(4,966)	(4,459)			
Other including vacancies	(-2,779)	(130)	(-15,270)			
New dwelling completions	22,870	12,496	23,503	100.0	100.0	100.0

Source: City of Toronto Planning Board, Research Section, Changes in the Housing Stock 1951-1971, 1974.

TECHNICAL APPENDIX D

PROJECTION OF HOUSING AND RESIDENTIAL LAND REQUIREMENTS FOR THE COLUC AREA

Based upon the analysis and results presented in the three preceding appendices and assumptions on the future performance of several central housing market relationships, projections are made of total housing requirements by type of unit and concomitant land requirements for the COLUC Area over the 1971-2001 period. In Technical Appendix E these Area projections of housing and residential land requirements are allocated to 23 urban places.

1. DEFINITIONS

Housing requirements refer to the expected number of new dwellings units which will have to be constructed in the COLUC Area to satisfy net household formation, vacancies, and net replacement demand. Housing requirements generated by net household formation are called demographic housing requirements while housing requirements due to an increase in vacancies and net replacement demand are referred to as other housing requirements.

It should be emphasized that housing requirements and

housing needs are not the same. Housing needs generally relate to the number of households paying an unusually high share of their incomes for shelter and households residing in physically substandard or overcrowed accommodation. In contrast, a projection of housing requirements is a forecast of the probable number of new housing units that will have to be constructed in an area over a given period to meet underlying demand.

Separate projections are provided for three types of housing: low density, medium density and high density. Low density housing includes single-detached, semi-detached and duplex dwellings. Medium density housing refers to all types of housing which are not high-rise apartments or classified as low density housing. Traditional types of medium density housing include row dwellings and walk-up apartments. In recent years new forms of medium density housing such as stacked twonhouses have emerged. High-density housing includes high-rise apartments which are generally defined to include all apartment buildings having elevators. The combination of low and medium density housing is referred to as family-type accommodation.

Lastly, the projections of residential land requirements will be based upon dwelling densities per gross residential acre. Gross residential acreage is defined to include in addition to the lots on which housing is situated half of the streets adjacent to lots plus community facilities such as schools, local parks and small shopping centres.

2. DEMOGRAPHIC HOUSING REQUIREMENTS BY TYPE*

In this section the household projections for the COLUC Area which were derived in Technical Appendix A are translated into occupied housing units by type, namely low density, medium density and high density housing. Initially, total demographic housing requirements are split into family-type accommodation and high density housing, and then family-type accommodation is separated into low density and medium density housing. Demographic housing requirements are estimated by calculating the changes in total occupied dwelling units over the 1971-1986 and 1986-2001 periods.

The estimating procedure for projecting total occupied housing units by type appears to assume that all non-family households in 1971, 1986 and 2001 lived in or will live in high density housing and that family households live in both family-type accommodation and high density housing. This is not the case however. The single-detached and owner-occupied

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*It was initially planned to prepare two projections of demographic and total housing requirements -- one based upon a simple extrapolation of past trends and the other based upon a more detailed analysis of the various factors involved. The two projections produced very similar results so only the consultant's "best estimate" of probable housing requirements is presented in this appendix.

housing to family household ratios presented in Tables B-7 and B-8 and the 1961-1971 changes in these ratios presented in Tables B-9 and B-10 relate the total stock of these housing types to the number of family households only.[*] To the extent that non-family households occupy family-type accommodation, these ratios overstate the proportion of families living in this type of housing. The analysis indirectly therefore does allow for the fact that some non-family households, particularly in the "65 and over" age group, live in family-type accommodation.

The approach used to separate total family household housing requirements into family-type accommodation (i.e., low and medium density housing combined) and high density housing includes the following steps.

Step 1: From data included in Tables B-9 and B-10 estimates were made of changes in the family-type accommodation/ family households ratios by age of household head in the COLUC

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[*] It will be recalled that Census data are not available for the type of housing occupied by family and non-family households by age of head separately. Hence, it was necessary to relate the total stock of family-type accommodation to family households, which makes it necessary to assume in the calculations that non-family households live only in high density housing.

In addition, it should be noted again that Statistics Canada staff consider 1971 Census data on the number of single-attached dwellings as unreliable. In the Tables in Technical Appendix B family-type accommodation is approximated by two series -- single-detached dwellings and owner-occupied housing. It would have been more appropriate to approximate family-type accommodation by the sum of single-detached and single-attached dwellings.

Area. These estimates are taken from Table B-10 for all age groups except the "Under 25" group where the change shown in Table B-9 is used.[*] The estimates are shown in Table D-1 under the "Total Change" column for the 1961-1971 decade.

Step 2: The estimated percent change in family-type accommodation/family households ratios by age of head were then sub-divided into two components: a preference induced component and a housing cost/income induced component.

The comparative analysis presented in Technical Appendix B indicated that the family-type accommodation/family household ratios in the younger age groups declined between 1961 and 1971 even in areas such as Winnipeg and Calgary which did not experience a marked deterioration in the housing cost/income relationship. This is suggestive of a relative switch in housing preferences by younger families to high density housing over the period.

The COLUC Area in addition to the above experienced a relatively sharp percent decline in the family-type accommodation/family household ratio in the "25-34" age group and declines, albeit more moderate, in the four age groups above the "25-34"

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[*] It should be remembered the changes shown in Tables B-9 and B-10 are based on two alternative approximations of family-type accommodation, neither of which is entirely satisfactory. Generally, the owner-occupied housing series is preferred as it is somewhat more comprehensive. However, for the "Under 25" age group the 1961-1971 percent decline in the family-type accommodation/family household is much larger for the owner-occupied dwelling series than for the single-detached dwelling series, i.e., the percent decline in occupancy of single-detached housing was smaller than the percent decline in home-ownership. Since the concern here is with the type of dwelling occupied and not tenure, the percent change in the single-detached dwelling series is used for the "Under 25" age group.

Table D-1: PROJECTED CHANGES IN FAMILY-TYPE ACCOMMODATION/FAMILY HOUSEHOLD RATIOS BY AGE OF HOUSEHOLD HEAD, COLUC AREA, 1971-1986 AND 1986-2001

	1961-1971			15 Year Equivalent of 1961-1971		
	Preference Induced	Cost/Income Induced	Total Change	Preference Induced	Cost/Income Induced	Total Change
Under 25	-21.5	-8.5	-30.0	-32.2	-12.8	-45.0
25-34	-14.6	-10.7	-25.3	-21.9	-16.1	-38.0
35-44	1.4	-6.8	-5.4	2.1	-10.2	-8.1
45-54	2.4	-6.9	-4.5	3.6	-10.4	-6.8
55-64	2.2	-9.7	-7.5	3.3	-14.5	-11.2
65 and over	4.9	-8.1	-3.2	7.4	-12.2	-4.8

	1971-1986			1986-2001		
	Preference Induced	Cost/Income Induced	Total Change	Preference Induced	Cost/Income Induced	Total Change
Under 25	-10.0	-20.0	-30.0	-10.0	-15.0	-25.0
25-34	- 5.0	-25.0	-30.0	- 5.0	-20.0	-25.0
35-44	2.0	-15.0	-13.0	--	-12.0	-12.0
45-54	2.0	-10.0	- 8.0	1.0	- 8.0	- 7.0
55-64	2.0	-15.0	-13.0	1.0	-12.0	-11.0
65 and over	7.0	-12.0	- 5.0	5.0	-10.0	- 5.0

Source: Refer to text.

group. These suggest that the sharp rise in home-ownership housing costs compared to the increase in family income between 1961 and 1971 tended to "push" families into high density housing. Thus, in the COLUC Area the decline in the proportion of families living in family-type accommodation between 1961 and 1971 was probably caused by both cost push forces (the more rapid increase in home-ownership carrying charges compared to income growth) and demand pull forces (housing preferences).

In order to estimate the separate impact of preferences and cost factors on the changes in family-type accommodation/family households ratios by age of head, it is assumed that the average changes in the ratios in Calgary and Winnipeg are indicative of the influence of preferences in the COLUC housing market. The difference between the total change and the estimated change due to preferences is attributed to rising home-ownership housing costs compared to incomes. The resultant breakdown of the total change in each of the ratios between 1961 and 1971 between preferences and cost pressures are presented in Table D-1.

Based on these estimates, it appears that the relatively rapid increase in home-ownership housing costs over the 1960's in the COLUC Area resulted in a reduction in the proportion of families in all age groups living in family-type accommodation; a shift in preferences appears to have also produced a decline in the proportion of families under the age of 35 who live in family-type

accommodation over the decade.

Step 3: The changes in family-type accommodation/family households ratios by age of head between 1961-1971 were extended to a 15-year period by multiplying each change by 1.5. Since these ratios are being projected for two 15-year periods (1971-1986 and 1986-2001), this calculation simply converts the past trend to a comparable period.

Step 4: The family-type accommodation/family household ratios by age group are projected for the 1971-1986 and 1986-2001 periods.

For the 1971-1986 period it is assumed that the increase in home-ownership housing costs compared to incomes will be slightly greater than over the 15-year equivalent of the 1961-1971 period. Hence, the percent reduction in families living in family-type accommodation due to cost pressures will be slightly higher over the 1971-1986 period. In contrast, it is assumed that the influence of preferences will result in a sharp reduction in the rate of decline in the proportion of families preferring to live in family-type housing over the period. Over the 1986-2001 period, it is assumed that the preference-induced changes in the family-type accommodation/family households ratios will be similar to the 1971-1986 period; the housing cost/income induced declines are assumed to be slightly smaller than over the 1971-1986 period. Table D-1 presents the assumed rates of change in the family-type accommodation/family households ratios over the 1971-1986 and

1986-2001 periods.

How reasonable are these assumptions about future trends in housing preferences and home-ownership cost/income relationships? Evidence accumulated during the first few years of the 1970's strongly suggests that more families in the "under 25" and "25-34" age groups are purchasing housing than was the case in the 1960's. In retrospect it appears that many young families in the 1960's merely postponed the decision to buy a home. It is not clear however whether the rate of decline in the family-type accommodation/family ratios for younger families has simply tapered off, stablized or reversed in the early 1970's. It is our "guesstimate" that the rates of decline have slowed down.

Regarding home-ownership costs/income performance, it is evident that in the first years of the 1970's, increases in home-ownership costs in the COLUC Area surpassed increases in income by a wide margin, probably much more than that implicit in the figures in Table D-1. It is felt however that governments in the COLUC Area were unprepared for the recent upsurge in demand for family-type accommodation but have now recognized that a serious problem exists. Thus while governments appear to be reacting with a substantial lag to the shortage of serviced land in the COLUC Area, over the 1971-1986 period as a whole the average annual increase in the ratio of home-ownership cost to family incomes will probably not be as large as the increase

during the early 1970's.

Step 5: The projected rates of change in the ratios of family-type accommodation to family households derived in Step 4 for the 1971-1986 period are then applied to the estimated 1971 ratios of family-type accommodation to family households by age of household head. The following 1971 ratios are used in the calculations.

Age of Household Head	Estimated Ratio of Family-Type Housing to Family Households in 1971
Under 25	35.4
25-34	64.4
35-44	88.8
45-54	92.3
55-64	94.8
65 and over	117.9
	84.6

These ratios are derived from 1971 Census estimates of the stock of single-detached and single-attached dwellings in the COLUC Area.*

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*Because the 1971 Census count of single-attached dwellings (double houses plus row dwellings) probably overstates the actual number of single-attached dwellings, the resultant projections of family-type housing requirements are also overstated by an unknown amount. However, if the two series used earlier to approximate family-type accommodation -- single-detached and owner-occupied dwellings -- were used as the base for the calculations, the projections of family-type housing requirements would be understated. It was decided to use the higher projection in the analysis.

Table D-2 presents the projections of total occupied housing units by type in the COLUC Area for the years 1986 and 2001. Total occupied units are projected to rise from about 985,000 units in 1971 to 1,700,000 units in 1986 and 2,400,000 units in 2001. The stock of family-type accommodation is projected to decline from about 68 percent of total housing units in 1971 to 52 percent in 1986 and 47 percent in 2001. The ratio of the stock of family-type accommodation to the number of family households is expected to decline from about 85 percent in 1971 to 72 percent in 1986 and 66 percent in 2001.

In terms of additional housing units by type required to meet net household formation over the 1971-2001 period, these are as follows:

Table D-3: DEMOGRAPHIC HOUSING REQUIREMENTS, COLUC AREA, 1971-2001

	Increase in Occupied Housing Units	Percent Distribution		
		Family-type Accommodation	High Density Housing	Total
	Dwelling Units	Percent		
1971-1986	711,000	31.6	68.4	100.0
1986-2001	698,000	32.9	67.1	100.0
1971-2001	1,409,000	32.2	67.8	100.0

Over the 1971-2001 period it is projected that roughly one-third of demographic housing requirements will be for family-type

Table D-2: PROJECTION OF OCCUPIED HOUSING UNITS BY TYPE AND BY AGE OF HOUSEHOLD HEAD, COLUC AREA, 1971, 1986, 2001

	Occupied Households			Family-Type Accommodation as Percent of Total	Family-Type Accommodation as Percent of Family Households
	Family-Type Accommodation	Other	Total		
	Dwelling Units			Percent	Percent
1971					
Under 25	15,206	50,698	65,904	23.1	35.4
25-34	116,879	98,919	215,798	54.2	64.4
35-44	180,825	44,195	225,020	80.4	88.8
45-54	159,334	37,520	196,854	80.9	92.3
55-64	105,111	38,404	143,515	73.2	94.8
65 and over	87,107	50,618	137,725	63.2	117.9
Total	664,462	320,354	984,816	67.5	84.6
1986					
Under 25	11,751	94,363	106,114	11.1	24.8
25-34	139,471	292,890	432,361	32.2	45.1
35-44	256,884	130,305	387,189	66.3	77.2
45-54	196,988	72,597	269,585	73.1	84.9
55-64	161,018	98,120	259,138	62.1	82.5
65 and over	123,050	118,422	241,472	51.0	112.0
Total	889,162	806,697	1,695,859	52.4	72.5
2001					
Under 25	10,739	152,708	163,447	6.6	18.6
25-34	120,014	376,414	496,428	24.2	33.8
35-44	304,816	216,628	521,444	58.4	68.0
45-54	312,591	147,696	460,287	67.9	79.0
55-64	198,955	162,453	361,408	55.0	73.4
65 and over	171,840	219,497	391,337	43.9	106.4
Total	1,118,955	1,275,396	2,394,351	46.7	66.2

Source: Refer to text.

accommodation and two-thirds high density housing.

Step 6: The last step in the projection of demographic housing requirements is to split family-type housing requirements into low density and medium density housing respectively. Low density housing includes single-detached, semi-detached and duplex dwellings.

Estimates of recent trends in the number of medium density housing units are approximated by the number of row dwelling units constructed. While median density housing includes low-rise apartment structures as well as row units, very few apartment starts in the COLUC Area in recent years have been in smaller structures. Table D-3 shows that over the past four years about 95 percent of apartment starts have been in buildings of 50 or more units. It is assumed that buildings of 50 or more are probably high density housing units.

Table D-4: APARTMENT STARTS BY SIZE OF STRUCTURE, COLUC AREA,(1) 1970-1973

	Size of Structure					
	1-9 Units	10-24 Units	25-49 Units	50-99 Units	100 and More Units	Total
1970	0.8	1.1	1.5	10.1	86.6	100.0
1971	0.4	1.2	4.0	10.5	84.0	100.0
1972	0.6	1.4	2.1	7.6	88.3	100.0
1973 (Jan.-Sept.)	0.9	2.2	2.2	7.3	87.3	100.0

(1) Toronto and Hamilton Census Metropolitan Areas.

Source: Statistics Canada, Housing Starts and Completions.

The relative importance of row dwellings in the new family housing market has risen rapidly over the past 15 or so years in most urban markets across the country. In the COLUC Area, row dwelling starts as a percent of total single-detached, semi-detached, duplex and row starts increased from virtually nil in the 1950's to 23 percent in the 1971-1973 period. Over the entire 1961-1973 period row starts accounted for 17.5 percent of all starts of family-type accommodation in the COLUC Area. In contrast, in the Calgary and Winnipeg markets row dwelling starts accounted for less than 10 percent of all starts of family-type accommodation over this period.

Table D-5: ROW DWELLING STARTS AS PERCENTAGE OF TOTAL STARTS OF FAMILY-TYPE ACCOMMODATION, COLUC AREA, CALGARY AND WINNIPEG, SELECTED PERIODS, 1961-1973

	Percent			
	1961-65	1966-70	1971-73	1961-73
COLUC Area	10.4	19.3	22.8	17.5
Calgary	1.0	9.0	10.7	7.2
Winnipeg	5.3	14.8	9.4	9.8

Source: Central Mortgage and Housing Corporation.

If it is assumed that the average of the Calgary and Winnipeg experience represents the influence of preferences on the volume of median density housing constructed, it appears that in the COLUC Area, high and rising home-ownership costs and preferences

each accounted for about half of the upsurge in row construction over the 1961-1973 period. Over the 1971-1973 period, it is likely that the effect of rapidly rising housing costs outpaced the influence of preferences in the COLUC Area. It is assumed that cost pressures on low density housing will result in approximately 40 percent of all starts of family-type accommodation over the 1971-1986 period being in medium density forms, _e.g._, row, stacked townhouses, low-rise apartments. This percentage is projected to rise to 65 percent over the 1986-2001 period.

Projections of demographic housing requirements separated into three types of housing are presented below.

Table D-6 BREAKDOWN OF DEMOGRAPHIC HOUSING REQUIREMENTS INTO LOW, MEDIAN AND HIGH DENSITY HOUSING, COLUC AREA, 1971-2001

	Family-Type Accommodation		High Density Housing	Total
	Low Density	Median Density		
1971-1986	135,000	90,000	486,000	711,000
1986-2001	80,000	149,000	469,000	698,000
1971-2001	215,000	239,000	955,000	1,409,000

3. OTHER HOUSING REQUIREMENTS BY TYPE

Yet to be projected are increases in vacancies and net replacement demand.

Based upon the analysis contained in Technical Appendix C,

it is assumed that the vacancy rates for family-type accommodation will be 1.75 percent of the stock of occupied dwellings in 1986 and 2001; the comparable vacancy rate for high density housing is assumed to be 4.5 percent.

It was not possible to reliably estimate the importance of net replacement demand as a component of housing requirements in the COLUC Area over the last decade. What limited information there is available suggests that net replacement demand has been fairly small. It was decided therefore to disregard net replacement demand in the projections of housing requirements. This assumption appears reasonable providing it is assumed: (a) that unrealistic rent ceilings are not imposed on privately-owned rental accommodation over the 1971-2001 period; (b) that government subsidized rental direct construction housing programs (excluding rent supplement programs) account for no more than 15-20 percent of rental housing starts over the period; or (c) that social conditions in the central cities of the COLUC Area do not deteriorate over the 1971-2001 period as they have in many large U.S. urban areas. Any one of these conditions could conceivably lead to a sharp upswing in net replacement demand.

Increases in the number of vacant dwellings under the assumptions mentioned above will be the following:

Table D-7: PROJECTED INCREASE IN VACANT HOUSING UNITS, COLUC AREA, 1971-2001

	Family-Type Accommodation		High	Total
	Low Density	Medium Density	Density Housing	
	Dwelling Units			
1971-1986	3,000	1,000	23,000	27,000
1986-2001	2,000	3,000	35,000	40,000
1971-2001	5,000	4,000	58,000	67,000

4. TOTAL HOUSING REQUIREMENTS BY TYPE

Total housing requirements which consist of demographic housing requirements plus the increase in vacant units over the 1971-2001 period in the COLUC Area are projected at the following:

Table D-8: PROJECTIONS OF TOTAL HOUSING REQUIREMENTS, COLUC AREA, 1971-2001

	Family-Type Accommodation		High	Total
	Low Density	Medium Density	Density Housing	
	Dwelling Units			
1971-1986	138,000	91,000	509,000	738,000
1986-2001	82,000	152,000	504,000	738,000
1971-2001	220,000	243,000	1,013,000	1,476,000

Over the 1971-2001 period the projections indicate that about 1.5 million new housing units will be required in the COLUC Area. Total housing requirements over each of the 1971-1986 and 1986-2001 periods are expected to be about the same.

5. RESIDENTIAL LAND REQUIREMENTS

The preceding projections of COLUC Area housing requirements are translated into residential land requirements by applying appropriate density ratios to each of the types of housing. These density ratios for the 1971-2001 period are derived from a recent study of residential developments approved in 1971 within the Municipality of Metropolitan Toronto.* This study indicates average units per gross residential acre of the following:

Type of Housing	Areas	Average Units Per Acre
Single-detached	City plus Boroughs	4.5
Semi-detached	City plus Boroughs	7.0
Row	City plus Boroughs	15.0
Apartments	City plus York, East York	120.0
Apartments	Scarborough, North York and Etobicoke	50.0

In the calculations it is assumed that semi-detached units will account for an increasing proportion of low density housing starts over the 1971-2001 period. Average density for low density housing is projected to rise to 6.0 units per acre over the 1971-1986 period and 6.5 units over the 1986-2001 period.

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*This study was undertaken by the Metropolitan Toronto Planning Board Research Division.

For median density housing, which includes new forms of low-rise multiple housing structures in addition to the conventional row or townhouse developments, it is assumed that the density ratio over the 1971-1986 and 1986-2001 periods will be 25 and 35 units per gross acre respectively.

For high density housing it was necessary to split total housing requirements into two groups: units to be constructed at an average of 120 units per gross acre and units to be constructed at an average of 50 units per acre.

Data are not available on the proportion of total apartment starts in the COLUC Area which in the past were constructed at these densities. As a crude approximation, it is assumed that apartment starts in the Cities of Toronto and Hamilton and the Boroughs of York and East York approximate the proportion of total apartment units constructed at the higher density. During the latest three years, 1971-1973, these areas accounted for 29 percent of total apartment starts in the COLUC Area.

It is assumed that the proportion of high-density housing requirements at the higher density will average 35 percent over the 1971-1986 period and rise to 40 percent over the 1986-2001 period. The impact of rapidly rising land costs is assumed to cause this upward trend in high-rise apartment densities.

The resultant projections of residential land requirements indicate that a total of about 56,000 acres of land will be needed over the entire 1971-2001 period, with almost 60 percent of this

land needed during the 1971-1986 period. Most of the land is needed to provide for low density housing. It should be noted that while most of the land requirements will be for previously undeveloped land, a portion of high density housing will be on redeveloped sites.

Table D-9: PROJECTIONS OF RESIDENTIAL LAND REQUIREMENTS, COLUC AREA, 1971-2001

	Family Type Accommodation		High Density Housing	Total
	Low Density	Medium Density		
	Acres			
1971-1986	23,000	3,640	6,318	32,958
1986-2001	12,615	4,343	6,557	23,515
1971-2001	35,615	7,983	12,875	56,473

TECHNICAL APPENDIX E

PROJECTION OF RESIDENTIAL LAND REQUIREMENTS BY URBAN PLACE

This appendix has two purposes: (a) to allocate the approximately 56,000 acres of residential land requirements projected for the COLUC Area over the 1971-2001 period among 23 urban places and (b) to attempt to provide some quantitative projections of the probable magnitude of total residential land requirements by urban place between the year 1971 and the time each urban place attains its mature state.

The projections contained in this appendix must be regarded as only very rough approximations of possible magnitude of residential land requirements by urban place. It is hoped that presentation of these rough projections at this time will encourage a dialogue between the consultant and the COLUC Support Staff and othersand lead to an improved set of projections for inclusion in the final report. In preparing the projections, it would have been desirable to have undertaken an analysis for each urban place similar to the analysis which was done for the COLUC Area. This was not practical in light of severe data limitations and budgetary and timing constraints. Instead, the land requirements projections are based on the consultant's knowledge of trends within the COLUC Area housing markets, the considerable amount of census and housing data collected on a number of the

urban places within the COLUC Area, and innumerable assumptions.

1. BASIC APPROACH UNDERLYING PROJECTIONS OF RESIDENTIAL LAND REQUIREMENTS*

Household projections for each urban place in 1986 and 2001 were based upon population projections provided by the COLUC Support Staff. The projected population in each urban place is divided by an estimate of the average household size in 1986 and 2001. These estimates of average household size are based upon the estimated percent decline in average household size between 1971 and 1986 and 1986 and 2001 for the COLUC Area (see Table A-6). For the four regional centres (Metro Toronto, Hamilton, Oshawa, and Mississauga), it was assumed that the percent decline in average household size would be slightly greater than the COLUC Area decline over the two periods while the percent decline for the other urban places were assumed to be slightly less. Hence, it is assumed that smaller non-family households will increase at a faster rate in the four regional centres than in the other urban places.

Increases in both population and households for each urban place were than calculated for the 1971-1986 and 1986-2001 periods. Next the increases in population and households in

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*A great deal of background statistical information used in deriving the projections is available on the consultant's work-sheets. Given the quantity of material involved, it was not practical to include this information in the reports. The consultant is of course willing to meet with the COLUC Support Staff to go through this material in some detail.

each urban place were expressed as a proportion of the total increase in population and households for the COLUC Area. The resultant population data are presented in Table E-1.

Then data were collected on the volume of housing starts by type and urban place for the following periods -- 1952-55, 1956-60, 1961-65, 1966-1970, 1971-1973 and 1952-1973. Percentage distributions of starts by type in each urban place and starts by type in each urban place as a proportion of total COLUC Area starts by type were then calculated for each period.

Combined with the assumption that the average density ratios for each housing type calculated in Technical Appendix D apply in each urban area, the above population, household and housing data were used as a basis for allocating total COLUC Area land requirements by housing type to each urban place.

Projections of land requirements between 2001 and maturity by urban place were made by applying the 1986-2001 ratios of land requirements to projected increases in population to the increases in population between 2001 and maturity.

2. PROJECTIONS OF RESIDENTIAL LAND REQUIREMENTS BY URBAN PLACE

Table E-2 shows the allocation of total residential land requirements for the 1971-1986 and 1986-2001 periods by urban place. In addition some very rough projections of total residential land requirements by urban place between 1971 and mature state

Table E-1: PROJECTED INCREASE IN POPULATION BY URBAN PLACE; SELECTED PERIODS, 1956-2001

	Number of Persons (000's)			Percent Distribution (%)		
	1956-71	1971-86	1986-2001	1956-71	1971-86	1986 2001
West Sector	(366)	(237)	(613)	(28.8)	(22.3)	(47.3)
Hamilton	103	46	200	8.1	4.3	15.4
Burlington	55	20	35	4.3	1.9	2.7
North Burlington	--	--	9	--	--	0.7
Milton	3	2	2	0.2	0.2	0.2
Oakville	36	9	24	2.8	0.8	1.8
North Oakville	--	--	19	--	--	1.5
Mississauga	98	81	135	7.7	7.6	10.4
Erin Mills	1	45	132	0.1	4.2	10.2
Malton	10	--	12	0.8	--	0.9
Brampton-Bramalea	51	27	38	4.0	2.5	2.9
Georgetown	10	7	7	0.8	0.6	0.5
East Sector	(74)	(227)	(347)	(5.8)	(21.4)	(26.8)
North Pickering	--	28	90	--	2.6	7.0
South Pickering	12	37	32	0.9	3.5	2.5
Ajax	7	11	21	0.6	1.0	1.6
Oshawa-Whitby	52	145	140	4.1	13.6	10.8
Columbus	--	--	32	--	--	2.5
Bowmanville	1	6	20	0.1	0.6	1.5
Audley	1	--	12	0.1	--	0.9
North Sector	(38)	(55)	(44)	(3.0)	(5.2)	(3.4)
Woodbridge	1	3	6	0.1	0.3	0.5
Markham	7	7	3	0.6	0.7	0.2
Richmond Hill	13	20	15	1.0	1.9	1.2
Newmarket-Aurora	17	25	20	1.3	2.4	1.5
Metro Toronto	702	473	238	55.2	44.5	18.4
Rest of COLUC	92	68	50	7.2	6.4	3.9
Total COLUC	1,272	1,061	1,292	100.0	100.0	100.0

Source: COLUC Support Staff.

Table E-2: PROJECTIONS OF TOTAL RESIDENTIAL LAND REQUIREMENTS BY URBAN PLACE, COLUC AREA, 1971-MATURITY

	1971-86	1986-2001	2001-Maturity	Total
West Sector	(10,000)	(10,700)	?	?
Hamilton	2,300	3,660	1,600	7,560
Burlington	850	600	270	1,720
North Burlington	--	125	1,080	1,205
Milton	100	40	180	320
Oakville	425	350	1,650	2,425
North Oakville	--	225	2,600	2,825
Mississauga	3,150	2,500	1,350	7,000
Erin Mills	1,650	2,400	1,500	5,550
Malton	100	100	100	300
Brampton-Bramalea	1,200	625	2,600	4,425
Georgetown	225	75	150	450
East Sector	(8,900)	(6,300)	?	?
North Pickering	1,600	1,950	1,600	5,150
South Pickering	2,000	565	550	3,215
Ajax	475	385	1,350	2,210
Oshawa-Whitby	4,550	2,300	800	7,650
Columbus	--	565	2,100	2,665
Bowmanville	275	360	--	635
Audley	--	175	990	1,165
North Sector	(2,700)	(1,800	?	?
Woodbridge	100	275	145	520
Markham	250	125	250	625
Richmond Hill	1,100	625	630	2,355
Newmarket-Aurora	1,250	775	1,350	3,375
Metro Toronto	8,700	3,400	1,190	13,290
Rest of COLUC	2,700	1,300	?	?
Total COLUC	33,000	23,500	?	?

Source: Refer to text.

are also included.

Over the 1971-1986 period residential land requirements are projected to be largest in the West Sector of the COLUC Area (10,000 acres) followed by the East Sector (8,900 acres) and Metro Toronto (8,700) acres. It should be noted that these projections include all sites needed for residential construction, i.e., both previously undeveloped sites and redeveloped sites.

In the 1986-2001 period, projected land requirements are again largest in the West Sector (10,700 acres) and are next largest in the East Sector (6,300 acres). Land requirements in Metro Toronto are sharply below the 1971-1986 level during this period.

These land requirement projections must be regarded as rough approximations only and are presented in order to stimulate discussion on the very complex estimating problems involved into their preparation. It is expected that the projections will be further refined for presentation in the study's final report.

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March 20, 1974

Mr. R. A. McNally
Executive Secretary
COLUC Task Force
3rd Floor
801 Bay Street
Toronto, Ontario

Dear Mr. McNally,

We are pleased to enclose 50 copies of the first phase report for our study of housing and residential land requirements in the COLUC Area.

This report contains our "best estimates" of probable housing and residential land requirements for the total COLUC Area over the 1971-2001 period together with supporting technical material. These "best estimates" are based upon the population projections provided by the COLUC Support Staff and the assumption that the impact of government on the COLUC Area housing and land markets will not be materially different from that of the past decade or two.

The report also includes preliminary projections of residential land requirements by urban place within the COLUC Area between 1971 and mature state. These projections should not be regarded as our "best estimates" but as only rough possibilities.

We have two reasons for not including our "best estimates" of future land requirements by urban place at this time. Firstly, until we have received the reaction of the Task Force to our projections of housing and land requirements for the entire area, it seemed unwise to devote too much effort to the task of allocating these aggregate projections to individual urban places.

Secondly, the allocation of the aggregate housing and residential land requirements by urban place involves numerous calculations related to allocations of households and housing types. For purposes of the present study, which requires these

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allocations to be done only a couple of times, these calculations can be done manually. However, if after our study is completed, the Task Force Support Staff intends to manipulate these data further, it may be wise to construct a relatively simple computer model at this time. Woods, Gordon and Company estimates that the cost of constructing a model for this purpose would be in the $4,000 range. Mr. Michael McClew and I are willing to meet with you to discuss this possibility if you feel it has merit.

We look forward to receiving your comments on our report and to answer any questions you may have.

Yours truly,

Clayton Research Associates

Frank A. Clayton

Frank A. Clayton,
President.

FAC/KC
encl.
c.c. Mr. M.J. McClew

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area : phase 1 report.